APPENDIX B

HEALTH AND SAFETY PLAN

FOR

NON-TIME CRITICAL REMOVAL ACTIVITIES EE/CA SUPPORT SAMPLING

AT THE

TOLEDO TIE TREATMENT SITE
TOLEDO, OHIO

LOCATED AT

ARCO INDUSTRIAL PARK
TOLEDO, OHIO

FEBRUARY 1998
(Revised April 1998)
(Amended January 2000)

Prepared For:

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Summary of Amendments to Health & Safety Plan, January 2000

Cover Page	Amended to reflect Engineering Evaluation/Cost Analysis Support Sampling
B.1.4	Amended to reflect EE/CA support sampling activities
B.1.5	Amended to reflect status of site fencing and security
B.1.6	Amended to reflect modifications to project management structure for the EE/CA
B.2.4	Biological Hazards section amended
B.3.0	Hazard Analysis refined to reflect EE/CA support sampling activities. Replace entire section.
B.4.0	No Amendments
B.5.0	Contaminant Monitoring section amended to reflect anticipated EE/CA support sampling activities. Reflects data from previous removal activities. Replace entire section.
B.6.2	Amended to reflect EE/CA activities
B.7.0	No amendment
B.8.2	Amended to reflect EE/CA activities
B.9.0	No amendment
B.10.5.1	Amended to reflect modifications to project management structure
B.11.0	No amendments
B.12.0	No amendments

Attachment A amended to reflect replacement of table A-1
Attachment G amended to reflect changes to emergency number notification.
Attachment H replaced by respiratory protection program
Attachment I replaces former Attachment H to reflect updated accident/injury reporting

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B.1.2 Purpose

The specific purpose of this HASP is to detail the applicable engineering, administrative, and protective provisions which shall be followed to help ensure that the health and safety of the surrounding community, site personnel, and visitors is adequate. It also fulfills the applicable regulations mandated by the Occupational Safety and Health Administration (OSHA), U.S. EPA, and Ohio EPA including, but not limited to:

1. 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response);
2. 29 CFR 1910.1200 (Hazard Communications);
3. 40 CFR 264.54 and 1905.08(d)(4)(i) (EPA Contingency Planning); and,
4. 29 CFR 1926, Construction Industry Standards (Subpart P Excavations).

B.1.3 Site Location and History

The former Toledo Tie Treatment Site is an abandoned wood-preserving site that used coal tar creosote from 1923 to 1962. The Site is located in the City of Toledo, Lucas County, Ohio, and identified by the approximate coordinates of 41 degrees 38' 00" North latitude and 83 degrees 37' 05" West longitude. A site location map is presented in Figure 1. The Site encompasses approximately fifty acres, with the most heavily contaminated zones being the suspected waste lagoons, Williams Ditch, and the former creosoting tank farm. The Site is surrounded by areas zoned commercial and light industrial, and is known as Arco Industrial Park. The general project area is bounded by Hill Avenue to the north, Arco Drive to the west, Frenchmens Road to the south and Conrail railroad tracks to the east. Williams Ditch flows from southwest to northeast across the interior of the Site, ultimately discharging to Schneider Ditch and the Ottawa River.

B.1.4 Project Description

In general, the objectives of this plan are to address the health and safety issues that affect personnel during anticipated site activities, including but not limited to:

1. surveying (staking points and data collection);
2. clearing and grubbing;
3. investigative sampling, monitoring, and documentation;

4. magnetometer activities;

5. excavating test pits;

6. hollow stem auger drilling;

7. geoprobing;

8. sediment sampling;

9. sewer inspection; and,

10. soil relocation.

A detailed discussion of individual project tasks is included in the Engineering Evaluation/Cost Analysis Support Sampling Plan.

B.1.5 Site Access and Security

HAI personnel will periodically inspect the perimeter of the site. In the event that field personnel observe individuals trespassing on the property and/or suspect trespassers of theft or sabotage:

1. call the police;

2. secure site and verify that no immediate hazards exist for personnel on-site or the public adjacent to the site; and,

3. take any precautions to minimize the risk to the public and personnel.

Personnel shall understand that all activities, data, documents, etc. are confidential and intended for use by Kerr-McGee Chemical, LLC, the U.S. EPA, the Ohio EPA, and those parties so designated by Kerr-McGee legal counsel. If approached by persons from the community or other unauthorized visitors, field personnel shall request that the person's questions be directed to the lead Field Director or the Project Manager and escorted to an unrestricted area. All equipment, materials, and vehicles are the sole responsibility of the owner(s).

B.1.6 Project Organizational Structure

The following briefly describes the organizational structure and responsibilities of various personnel relative to administration of the health and safety program.

B.1.6.1 Project Manager

Scott Lockhart is the Project Manager for this project. The Project Manager shall be responsible for directing all required site activities in conjunction with the FSAP and Work Plan. The Project Manager shall be readily accessible and present on-site when possible during site work to see that activities are performed in a manner consistent with this HASP. This person should also, when possible, coordinate decisions that potentially affect employee health and safety with the HSC. The Project Manager shall have the authority to stop any phase of the project deemed dangerous to human health and the environment and/or not in substantial compliance with this HASP. The Project Manager or his designee also has the authority to suspend an individual from field activities for infractions of the HASP.

B.1.6.2 Health and Safety Coordinator (HSC)

The HSC for this project is Bill Burkett. The HSC is responsible for coordinating matters of health and safety with the Project Manger. The HASP for the project will be developed by the HSC and submitted to the Project Manager. The HSC shall work closely with the Project Manager and the Site Health & Safety Officer (SHSO) to ensure that all work is carried out in the safest manner possible. The HSC shall be responsible for ensuring the overall implementation and enforcement of this HASP. The HSC will assist the Project Manager to ensure that proper health and safety equipment is available for the project. This person is also responsible for verifying appropriate air monitoring procedures and personal sampling methods, as needed. The HSC will approve personnel to work on this site with regard to medical examinations and health and safety training. The HSC shall work with the SHSO and field personnel to minimize occurrences where employees are exposed to contaminant concentrations above the corresponding permissible exposure limits (PELs) or threshold limit values (TLVs), whichever is lower.

The HSC is authorized to suspend work or otherwise limit exposures to personnel if a HASP appears to be unsuitable or inadequate. Personnel will be directed by the HSC to change work practices if they are deemed hazardous to health and safety. The HSC may also remove field personnel from the project if their actions endanger their and/or their coworkers' health and safety.

B.1.6.3 Site Health and Safety Officers (SHSO)

The project SHSO is Ray Minarovic. The project SHSO shall be responsible for implementing the provisions of this plan during work activities. The SHSO shall report safety-related incidents or accidents to the Project Manager and HSC. He/she shall also have the authority to temporarily suspend field activities, if health and safety of field personnel are endangered, pending further consideration by the Project Manager and HSC. Only the Project Manager or his designee can order work to begin again. The SHSO has the authority to suspend an individual from field activities for infractions of the HASP, pending further consideration by the HSC. The SHSO is responsible for the daily enforcement of this HASP. He/she shall also be responsible for conducting or directing any necessary health and safety equipment maintenance, personal or perimeter air monitoring, accident or incident investigating/reporting, contractor/employee compliance procedures, and any other health and safety-related duties.

B.1.6.4 Field Personnel

Field personnel will be responsible for following the requirements set forth in this HASP. All persons entering the field should read and fully understand this HASP, and agree to comply with and implement its contents. Any incidents or variation from the plan must be discussed with the HSC, Project Manger, and SHSO.

The following table lists the suggested frequency and corresponding temperature for monitoring workers:

Table 2-2

Suggested Frequency of Physiological Monitoring

for Site Workers

ADJUSTING TEMPERATURE	NORMAL WORK CLOTHING	IMPERMEABLE CLOTHING
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

B.2.4 Biological Hazards

B.2.4.1 Insects

Numerous types of pest organisms may be present, including bees, mosquitoes, spiders, and ticks. The presence of flying and biting insects can produce potentially dangerous field conditions because of the distraction they may cause to site workers. Stings of bees and wasps may cause serious allergic reactions in certain individuals. The SHSO should identify all personnel with known insect allergies or for sensitivities before fieldwork begins. Spider bites can be extremely serious (i.e., those of the black widow). Others are unpleasant or uncomfortable, resulting in rashes, itching, and possible infection. The possibility of allergies greatly increases the danger since people are not usually aware of such allergies until they have been bitten. Therefore, spiders should be regarded as potentially hazardous. Ticks are parasites that feed on the blood of an animal/host and can carry several diseases, at least bringing several days of fever and pain and the worst causing brain damage.

Insect hazards may be reduced by the use of repellents where appropriate. Extreme care should be taken to avoid air, soil, and water contamination with any repellent. If bee or wasp nests are encountered when conducting work in a nesting area, the use of a carbon dioxide extinguisher (if available on-site) will temporarily incapacitate the insects until the nest can be physically removed using remote mechanical means, such as a long stick or branch. Taping or tying pant legs and shirt sleeves shut minimizes insect bite hazards.

B.2.4.2 Animals

Chipmunks, squirrels, rats, and other mammals have been known to harbor fleas carrying bubonic plague. Their bites can also carry rabies and other infectious diseases. Chipmunk-like animals pose a special problem because people tend to try to feed then or pet them, the increased contact bringing greater possibility of danger. Poisonous snakes may also be encountered on-site. Personnel should check for snakes before walking through grassy or debris-strewn areas.

B.2.4.3 Poisonous Plants

Poison ivy, poison oak, and poison sumac may be encountered while conducting field activities. All of these plants secrete oils that can cause an itching rash, which can spread. The best defense against poisonous plants is to learn to identify them and ultimately, not contact them. In summer months when leaves are present, if you cannot identify poisonous plants, avoid all three leafed plants. In the fall, spring, and winter when leaves are not present, the stems of these plants can still release oils and cause the associated rashes. Personnel should avoid stepping in areas where such vegetation may exist. Plastic sheeting may be used to reduce contact with vegetation, if work must be conducted in these areas.

B.3.0 HAZARD ANALYSES

B.3.1.1 Hazard: Contact with contaminated soils, groundwater, surface water, sediment, non aqueous phase liquids (NAPL), or dense non-aqueous phase liquids (DNAPL)

Precautions:

- Use layered latex and nitrile gloves when handling samples.
- Use layered latex and nitrile gloves when handling heavily contaminated soils.
- Always wear long pants.
- Wash hands thoroughly prior to eating, drinking, smoking, or applying cosmetics.
- If skin contact is made, immediately wash affected part with soap and water.
- Properly dispose of contaminated materials.
- Remove contaminated clothing as soon as possible.
- Always treat all handled materials as if they are contaminated.

B.3.1.2 Hazard: Inhalation of Dust or Gases

Precautions:

- Containerize contaminated soils immediately.
- Keep sample(s) away from face area. Do not smell sample for evidence of contamination.
- Obtain/use an air purifying respirator and appropriate cartridges, as necessary.

B.3.1.3 Hazard: Inhalation of VOCs and SVOCs

Precautions:

- Personnel shall stand upwind of product when possible.
- Personnel shall take breaks away from the contaminated area.
- If any symptoms of overexposure occur (i.e., headache, nausea, etc.), personnel shall immediately leave the work area and contact the HSC and/or Project Manager.
- Monitor breathing zone air to determine real-time levels of gases and vapors.

B.3.1.4 Hazard: Splashes, Flying Objects, and Overhead Hazards

Precautions:

- Safety glasses with side shields and hard hats shall be provided and should be worn by all project personnel in areas where the potential for splashes, flying objects, and overhead hazards exist.
- Personnel shall avoid working in areas that may be affected by flying debris.

B.3.1.5 Hazard: Inclement weather

Precautions:

- Work shall be ceased during thunderstorms with lightning and/or any other severe weather (i.e., tornado, hail, snow, etc).

B.3.1.6 Hazard: Traffic control

Precautions:

- Contact local authorities (i.e., traffic engineers/street departments) for appropriate safety requirements.
- Operate vehicles at safe speeds especially when working in rough terrain.
- Use cones, blockades, flashing signs, etc. when working near roadways or in high traffic areas.

B.3.1.7 Hazard: Noise exposure

Precautions:

- Hearing protection shall be provided to employees and shall be worn when levels exceed 85 dBA.

B.3.1.8 Hazard: Moving equipment and parts

Precautions:

- Steel-toed boots and hard hats are required when working around heavy equipment.
- Protective gloves should be worn when working with tools or equipment that could potentially cut or pinch fingers or hands.

B.3.1.9 Hazard: Fire/explosion

Precautions:

- Ignition sources shall be removed from any potentially flammable area.
- Non-intrinsically safe or non-explosion proof electrical devices will **NOT** be used in areas where a potential for fire/explosion exists.
- Monitor the atmosphere for combustibles.

B.3.2.1 Sediment and Surface Water Sampling

B.3.2.2 Hazard: Skin contact with contaminated media

Precautions:

- Latex and nitrile gloves shall be worn when sampling surface water. Gloves should be layered to provide greater protection from skin absorption.
- Hands, arms, face, and neck shall be thoroughly washed with soap and water prior to eating, drinking, smoking, or applying cosmetics.
- Areas of skin contacted by visually contaminated media shall be washed with soap and water immediately.
- Care shall be taken to avoid spilling/splashing surface water from the ditch.
- Do not place hands directly into media without proper glove protection.
- Assume that all surface water is contaminated.

B.3.2.3 Hazard: Inhalation of air contaminants

Precautions:

- Keep face away from contaminated media to avoid breathing gases that may be emanating from the material.
- Minimize the amount of time that is spent in the vicinity of contamination.
- Avoid smelling surface water or media as a means of determining degree of contamination.

- If any symptoms of overexposure occur, the contractor should stop work immediately and the SHSO shall contact the HSC and Project Manager.
- Stay upwind or crosswind of sampling or intrusive activity locations whenever possible.

B.3.3 Intrusive Investigations

B.3.3.1 Hazard: Potential Contaminant Release

Precautions:

- Work in discrete areas and limit the amount of area open at any one time.
- Conduct ambient air monitoring.
- Conduct air sampling.
- Provide appropriate spill response materials.
- Assume all residual materials generated are contaminated.

B.3.3.2 Hazard: Heavy Equipment Operation

Precautions:

- Wear hard hats and steel-toed boots.
- Stay a safe distance from equipment and be aware of equipment range of motion.
- Equipment should be equipped with backing alarms.
- Maintain eye contact with the operator.

B.3.4 Additional Hazards

B.3.4.1 Hazard: Traffic Concerns

Precautions:

- Be conscious of all personnel on site.
- Do not drive closer than within four feet of the ditch edge.
- Keep vehicle use to a minimum.

B.3.4.2 Hazard: Water/Drowning

Precautions:

- Always use the "buddy system".
- Avoid entering water unless necessary.
- PFDs may be required at the discretion of the health and safety coordinator.

B.3.4.3 Hazard: Handling Heavy Objects

Precautions:

- Implement proper lifting technique.
- Do not lift over 60 lbs. without assistance.

B.3.4.4 Hazard: Excessive Vegetation

Precautions:

- Be conscious of hidden trip hazards.
- Avoid poison ivy, poison sumac, poison oak, mold, and fungi.

B.3.4.5 Hazard: Eating, drinking, smoking, or use of tobacco products

Precautions:

- To avoid the unnecessary ingestion of hazardous chemicals, the consumption of the above mentioned items in the designated work zones is prohibited.
- Prior to consumption of food or tobacco products all personnel shall properly decon with soap and water.

B.3.4.6 Hazard: Slips, Trip, and Falls

Precautions:

- Clear walkways and work areas of equipment, tools, vegetation, and any other potential trip hazards.
- Mark, identify, or barricade other obstructions.
- Use caution or avoid working in areas with unstable terrain to minimize the potential for slips, trips, and falls.

B.3.4.7 Hazard: Unanticipated environmental and/or health and safety considerations

Precautions:

- Should any site personnel anticipate or recognize a potential safety or health hazard they should immediately report their concerns to the SHSO, HSC, Project Manager or on-site supervisor.

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B.5.0 CONTAMINANT MONITORING

The purpose of air monitoring is to identify and quantify airborne contaminants in order to:

1. Determine appropriate PPE;
2. Define areas where PPE is needed;
3. Assess potential health effects of exposure; and,
4. Determine the need for specific medical monitoring.

Integrated air monitoring includes both sampling and real-time monitoring. The integrated plan for the site is discussed in the following sections.

B.5.1 Site Ambient Air Monitoring

The SHSO or other party designated by the Project Manager shall be responsible for all on-site air monitoring. This monitoring shall in many cases be real-time in nature due to the constantly changing conditions that may be encountered during site work. Air monitoring shall be conducted at regular intervals for the following parameters as removal activities dictate:

1. semi-volatile and volatile organics;
2. dust, particulate matter (PM- 10) - as required by activity;
3. oxygen content (i.e., confined space conditions);
4. flammable or explosive atmospheres, and as necessary; and,
5. toxic substances (i.e., hydrogen sulfide, hydrogen cyanide).

During intrusive activities, air monitoring should be continuous and include real-time measurements for both volatile and semi-volatile vapors.

A weather station that measures air temperature, wind speed, wind direction, barometric pressure and relative humidity will be available at HAI on Glendale Avenue. The data gathered from this location is representative of the conditions at the Site. In addition, a nearby local television station may have meteorological data. Data will be recorded by the SHSO or his designee on a daily basis and kept on-site or at an off-site location proximate to the Site.

B.5.1.1 Oxygen Meter

Oxygen content should be measured as percent oxygen in air with 20.9 percent being normal. Oxygen levels below 19.5 percent or above 23.5 percent are considered hazardous. It is important to note that when oxygen levels are below 19.5 percent, LEL readings shall be inaccurate.

B.5.1.2 Combustible Gas Indicator

With regard to flammable or explosive atmospheres, concentrations are measured with a combustible gas indicator (CGI) as "percent of the lower explosive limit" or percent LEL. Ten percent LEL shall be the action level. It should be noted that organic vapors can still be present above safe level at the ten percent LEL level. A low LEL reading should not be interpreted as a safe condition in other terms of potential health effects to exposed, unprotected personnel. Also, if CGI readings exceed that of the lower explosive limit, a zero meter reading shall be observed. If a high concentration of gas (i.e., a concentration above the LEL) is suspected, a percent gas meter with an extended sampling probe in which the area can be monitored from a remote, safe area must be used to verify the presence of a combustible/non-combustible atmosphere.

B.5.1.3 Monitor for Aerosol and Dust

The PDM-3 MiniRam Personal Monitor or equivalent will be used at the discretion of the SHSO to detect and quantify the concentration of fugitive dust that may be created during field activities.

B.5.1.4 Personal Air Samplers

Personal air sampling devices such as badges or personal pumps will be used periodically during critical operations in which there is the potential to expose gross creosote-related contamination to the atmosphere.

B.5.1.5 Perimeter Air Sampling Stations

Perimeter air sampling stations will be strategically placed around the circumference of the site, as necessary. Depending on the results of the baseline sampling events, weather conditions and field activities, perimeter air samples may be obtained during intrusive activities. Taking into account changing weather patterns (i.e., wind direction) air samples shall be adjusted/repositioned, as needed, in order to achieve the most representative and accurate sample. A combination of real-time monitoring and sampling for target compounds and particulates will be used. This is further explained in Section B.5.5, Air Sampling Program.

B.5.1.6 Photoionization /Flame Ionization Detector

Exposures to toxic substances in air shall be monitored on a regular basis during anticipated site activities. Hand held direct reading -monitors, such as a HNu or Photovac 2020 photoionization detectors (PID), shall be utilized to sample for volatile, toxic organic substances. Exposure to toxic contaminants shall be kept at a minimum. Action levels for volatile organic compounds using a PID are provided in Table 5-1. These levels are conservative and take into account that many direct reading detectors, such as the PID, detect total organics and cannot differentiate between compounds. Also, the action level takes into account that a PID meter reading may not reflect the actual concentration of contaminants present in parts per million (ppm). Rather the actual concentration present may be significantly greater than the observed reading. A LEL/0_2, meter should be used to detect flammable atmospheres and to estimate the amount of gas present. A Flame Ionization Detector (FID) such as one manufactured by Photovac will also be used near intrusive activities to provide direct reading capability for the less volatile compounds. A dual PID/FID will also be used to periodically monitor at perimeter air sampling stations to correlate direct readings with analytical results.

TABLE 5-1
HAZARD MONITORING METHODS, ACTION LEVELS AND PROTECTIVE MEASURES

HAZARD	MONITORING METHOD	ACTION LEVEL	MONITORING SCHEDULE	PROTECTIVE MEASURES
Organic Vapors/Semi-Volatile Organic Vapors	HNU with 10.6 probe or greater eV probe (calibrated to Benzene)/ FID (Photovac, Foxboro, etc.)	Sustained reading above background in the site worker's breathing zone.	Continuing working and monitoring	Level D
		>5 ppm above background in the site worker's breathing zone. *After the implementation of engineering controls.	Cease work and reassess site conditions; upgrade PPE.	Level C
Explosion	CGI	0-10% LEL	Continue investigation.	Maintain level of site PPE
		10-20% LEL	Continue monitoring with caution as higher levels are encountered. Revoke Hot Work Permit. Stop all "hot work" in progress.	
		≥ 20% LEL	Explosion hazard – withdraw from area immediately, and contact SHSO, a reassessment of site conditions may be necessary.	Evacuate Area
Dust	PDM-3 Mini-RAM	No visible emissions.	Continuing working and monitoring	Watering, modification of equipment operations
Oxygen Deficiency	Oxygen Meter	<19.5%	Cease all operation and leave work area; contact HSC or SHSO.	No Entry
		19.5%-23.5%	Continue work; deviation from normal level may be due to the presence of other substances.	Continued Monitoring. Level of PPE
		>23.5%	Cease all operation and leave work area; contact HSC or SHSO; potential fire hazard may exist.	Evacuate Area

B.5.2 Frequencies and Locations

Frequencies and locations of monitoring shall be determined using a common sense approach by the SHSO in conjunction with the HSC, on an as needed basis. The SHSO will consider the nature and extent of site activities, weather conditions, and exposure potential for workers and/or the public. A more detailed discussion is provided in Section 5.5.

B.5.3 Action Levels

The levels of protection and action levels for personnel safety from organic vapors (volatiles and semivolatiles), combustible gases, oxygen deficiency, and fugitive dust are outlined in Table 5-1. Until analytical data from the soil stockpiles are obtained and reviewed, field personnel will adhere to the action levels defined in Table 5-1. The action levels can be adjusted accordingly once additional data is available. Clearing and grubbing and installation of test pits, shall begin in Level C. It is anticipated that some site work will be conducted in Level D environments unless conditions warrant increased personal protective equipment. Air monitoring and sampling may indicate the need for a higher level of protection. Action levels may be revised by the HSC to reflect changing conditions and additional air monitoring data. Changes in the action levels may only be instituted by the HSC through the SHSO. Field personnel shall be notified of any changes and the health and safety plan amended accordingly.

Derivation of Action Levels:

Perimeter: Considerations include the following:

1. Off-site receptors are most likely industrial workers at nearby businesses, and transient visitors at the various businesses (delivery, salespeople, etc.). A normal 40-hour work week is assumed. Exposure would be intermittent, lasting less than one hour.

2. Extent of intrusive activities will be limited to discrete working areas.

3. Activities most likely to generate airborne contaminants include test pits, hollow stem borings, clearing and grubbing, heavy equipment movement, soil stockpiling, and material handling. Active emissions control techniques are assumed.

4. Prevailing winds are from the southwest or west southwest, according to historical climatological data.

5. Potential contaminants, based on available data, are primarily PAH's, both in vapor phase and absorbed to particulate matter. Diesel fuel is suspected of being used as a carrier for creosotes and as such benzene compounds may be present.

6. The site is bordered on the south (generally upwind), by a regularly used rail corridor. Heavy urban traffic usage occurs west of the site during the standard workweek.

7. Action levels will also be determined based on sampling results from previous removal activities.

Work Area:

1. Activities most likely to generate airborne contaminants include test pits, hollow stem borings, clearing and grubbing, heavy equipment movement, soil stockpiling, and material handling.

2. Workers closest to active work areas during intrusive activities will have continuous air monitoring, personal air sampling and appropriate PPE.

3. Levels are based on lowest available published data regarding potentially respirable contaminants expected to be in the worker's breathing zone and are consistent with US EPA guidelines.

B.5.4 Personnel Monitoring

Personnel sampling in work zones will be performed according to the following schedule:

Air Monitoring Frequency*: PID - Every 15 minutes
FID - Every 15 minutes

*Real-time monitoring in work areas will be conducted every fifteen minutes or when work begins on a different portion of the site, new contaminants are found on the site, a different type of operation is initiated, or when work involves immediate contact with a suspected medium of contamination.

Personal sampling as necessary: Organic vapor badge (each worker) - SKC Charcoal or equal
High volume sampler with Teflon Filter (high-risk employees - one per work group) or equal.
*Personal air sampling will be conducted in conjunction with real-time assessments to document potential worker exposure and assess potential hazards in the work zone relative to action levels.

Oxygen Meter: As dictated by confined space entry or work between or around heavy equipment.

Carbon Monoxide Meter:	As dictated by work between or around heavy equipment.
Explosive/Combustible Meter:	As dictated by confined space entry.

B.5.5 Air Sampling Program

The primary objectives of conducting an air sampling program at this site are to:

1. Verify that personnel are adequately protected during intrusive activities that may expose gross creosote-related contamination to the atmosphere.
2. Protect the health or welfare of the public.
3. Collect data to quantitatively document exposure potential to airborne contaminants.

Air sampling will be performed to take into consideration the expected contaminants that may be released during the following intrusive activities:

1. Clearing and grubbing.
2. Hollow-stem auger work in areas of suspected gross creosote-related contamination.
3. Test pits in areas of suspected gross creosote-related contamination.

The following protocol will be used to meet the objectives of the air monitoring/sampling program.

1. *Collection of personal and perimeter air samples.*
2. Reassessment of PPE requirements and initial work area/perimeter action levels
3. Modifications to the HASP and integrated air monitoring program as necessary.
4. Implementation of an integrated air monitoring program.

Each of these components are described below:

1. Perimeter air samples will be obtained within the warehouse before and after intrusive activities begin.

2. Upwind and downwind perimeter air samples will be collected adjacent to a test pit where gross creosote-related contamination is likely to be encountered. Level C PPE will be used for this activity. Upgrade to Level B if air sampling suggests it is necessary. Any excavated material will be placed back into the excavation. One upwind sample location will be selected and a similar sample collected.

3. Data collected in the integrated air sampling program will be used to reassess PPE requirements and the initial perimeter action levels. Using the analytical data initial perimeter action levels and sampling methods will be reassessed considering the items described in Section 5. 1.

4. Prepare any necessary modifications to the Health and Safety Plan and/or the integrated air sampling/monitoring program to reflect predicted ambient air impacts.

5. Personnel working in the exclusion zones will be required to perform regular air monitoring, using hand held PID direct-read instruments, during intrusive activities and periodically around the perimeter at the site.

The proposed activities listed below and the appropriate measures to be taken after the initial background samples are as follows:

1. Routine daily non-intrusive site activities such as a general site inspection: periodic perimeter air monitoring. Background sampling will occur during routine activities.

2. Sediment sampling: direct ambient air monitoring in the breathing zone with an FID and a PID.

3. Surface water sampling: direct ambient air monitoring in the breathing zone with an FID and a PID.

4. Clearing and grubbing, hollow-stem auger work, and test pit installation: direct ambient air monitoring in the breathing zone with an FID, PID and Mini-RAM, perimeter air monitoring/sampling and personal air sampling. An oxygen meter and carbon monoxide meter will be available during periods of heavy equipment usage.

5. Backhoe test pits will be done in areas of varying levels of creosote-related contamination. Operators and personnel on the ground will remain upwind to the maximum extent practical. Direct ambient air monitoring with an FID and PID, personal air sampling, and perimeter monitoring/sampling, depending upon level of contamination.

It should be noted that all sampling will be conducted in the workers breathing zone to obtain the most representative sample. Any samplers staged at the perimeter of the site should also be located near the breathing zone. When personal samplers are attached to personnel being sampled during site activities, one representative sample shall be taken from each work group (i.e., technicians, operators etc.) working in the same general proximity.

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10. Use of contact lenses by personnel are not allowed during any activities when using respirators or when in areas where irritating gases may become trapped underneath lenses.

11. Wearing a respirator shall require the removal of all facial hair except small mustaches that are within the sealing surface of the respirator.

12. Changes in contingency plans shall be posted to notify all personnel of any modifications to safety protocols related to changing Site conditions.

13. No open flames shall be allowed inside the exclusion zone (i.e., smoking). Intrinsically safe or explosion proof equipment shall be used in potentially explosive atmospheres.

14. When in doubt, withdraw and reassess when encountering any potentially hazardous situation.

15. Be aware that chemical constituents may mimic or enhance symptoms of other illnesses or intoxication.

16. The SHSO shall maintain a log of meetings, facts, incidents, data, etc. relating to the project. Records shall remain at the Site for the duration of the project, if feasible.

17. Observance of applicable OSHA, EPA, general health and safety, and specific equipment use practices is mandatory.

B.6.2 Work Zones

B.6.2.1 Heavy Equipment/Drilling Operations

Test pit installation and hollow stem auger borings are anticipated to begin in Level C personnel protective equipment. However, the Site shall maintain designated work zones to provide for the general safety of personnel. A safe radius as defined by the SHSO or HSC shall be maintained around any drilling equipment, field study equipment, or other heavy equipment. Only required personnel shall be in the immediate proximity of operating equipment.

B.8.0 PERSONNEL PROTECTIVE SAFETY GEAR

B.8.1 Level D Protection

Level D protection will be worn on-site unless air monitoring/sampling indicates the need to upgrade PPE. Level D personnel protective safety gear consists of:

1. coveralls (disposable coveralls may be desirable);
2. safety boots (if applicable) or sturdy, slip-resistant shoes;
3. safety glasses or goggles (if liquid splash hazard exists);
4. hard hat;
5. work gloves (chemical resistant when contact with contamination is anticipated);
6. ear protection for personnel on/around heavy equipment, etc.;
7. saranex or poly-tyvek suits and latex and nitrile gloves and booties shall be worn when working in the exclusion zone; and,
8. steel-toed boots.

B.8.2 Level C Protection

Test pit installation and hollow stem auger work shall be initiated using Level C personnel protective safety gear. If sustained Level C work is deemed mandatory and authorized by the HSC or SHSO, equipment shall include:

1. full-face air purifying respirators equipped with combination organic vapor/HEPA particulate cartridges;
2. chemical resistant clothing, one piece, long sleeved and hooded;
3. outer nitrile work gloves and latex undergloves;
4. chemical resistant outer boots and inner disposable booties;
5. hard hat;
6. hearing protection for personnel on/around the drill rig or heavy equipment; and,

Upon appropriate notification of the emergency personnel, the SHSO shall notify, in order of priority the following individuals:

1. Project Manager;
2. HSC; and,
3. SHSO's Immediate Supervisor (if different than the HSC).

The Project Manager or his designee will be responsible for dissemination of information to the public or media. Prior to initiating activities, a meeting or telephone consultation with the appropriate local emergency response personnel and pertinent local government agencies will be conducted by the Project Manager or his designee and the HSC to brief them on site hazards and potential response requirements. The capabilities and response mechanisms of each potential responder shall be identified and documented. The contingency plan will be modified or revised to reflect changes and disseminated to each potential responder. Periodic updates of site activities, (i.e., when initiating new or different types of work) will be distributed to potential responders by the Project Manager or his designee.

TABLE A-1
HAZARD MONITORING METHODS, ACTION LEVELS AND PROTECTIVE MEASURES

HAZARD	MONITORING METHOD	ACTION LEVEL	MONITORING SCHEDULE	PROTECTIVE MEASURES
Organic Vapors/Semi-Volatile Organic Vapors	HNU with 10.6 probe or greater eV probe (calibrated to Benzene)/ FID (Photovac, Foxboro, etc.)	Sustained reading above background in the site worker's breathing zone.	Continuing working and monitoring	Level D
		>5 ppm above background in the site worker's breathing zone. *After the implementation of engineering controls.	Cease work and reassess site conditions; upgrade PPE.	Level C
Explosion	CGI	0-10% LEL	Continue investigation.	Maintain level of site PPE
		10-20% LEL	Continue monitoring with caution as higher levels are encountered. Revoke Hot Work Permit. Stop all "hot work" in progress.	
		≥ 20% LEL	Explosion hazard – withdraw from area immediately, and contact SHSO, a reassessment of site conditions may be necessary.	Evacuate Area
Dust	PDM-3 Mini-RAM	No visible emissions.	Continuing working and monitoring	Watering, modification of equipment operations
Oxygen Deficiency	Oxygen Meter	<19.5%	Cease all operation and leave work area; contact HSC or SHSO.	No Entry
		19.5%-23.5%	Continue work; deviation from normal level may be due to the presence of other substances.	Continued Monitoring Level of PPE
		>23.5%	Cease all operation and leave work area; contact HSC or SHSO; potential fire hazard may exist.	Evacuate Area

EMERGENCY TELEPHONE NUMBERS

Site Name Toledo Tie Treatment Site

GENERAL	**PHONE**
U.S. EPA 24-Hour Hotline (National Response Center)	1-800-424-8802
CHEMTREC (Chemical Information)	1-800-424-9300
LOCAL	
Ambulance	419/693-1611
Fire	419/936-3550
Police – Scott Park District Office	419/936-2000
Hospital	419/383-3888
***911 service available**	
Environmental Services – Bill Garber	419/936-3015
Public Utilities Department – Bob Williams	419/936-3959
Local Emergency Planning Committee (LEPC)	
Emergency Coordinator – Bill Halsey (Day)	419/245-0662
(24 Hour)	419/245-4977
Spill Response - Heritage Environmental	419/389-1451
Ohio Utilities Protection Service (OUPS)	800/362-2264
Hull & Associates, Inc.	
Project Manager: Scott F. Lockhart, P.E.	Office 419/385-2018
	Pager 419/323-0789
	Mobile 419/304-5845
Field Manager: Thomas Covrett	Office 419/385-2018
	Mobile 419/304-5859
Health & Safety Coordinator: William J. Burkett	Office 419/385-2018
	Pager 419/323-0886
	Mobile 419/304-5851
USEPA On-scene Coordinator: Ralph Dollhopf	Office 313/692-7682
	Pager 800/395-8903
Remedial Project Manager: Deborah Orr	Office 312/886-7576

ATTACHMENT H

Respiratory Protection Program

5.5 Respiratory Protection Program

Certain employees of Hull & Associates, Inc., during their regular course of duty may be required to enter environments where airborne contaminants, toxins, or sufficants are present; as such, a comprehensive respiratory protection program has been established. The purpose of this document is to establish respiratory protection procedures that meet or exceed regulatory guidelines as they apply to designated employees at various worksites.

5.5.1 Medical Evaluations

The use of respiratory protection may place a physiological burden on an employee that varies with the type of respirator worn, the job and worksite conditions in which the respirator is used, and the current medical status or health of the employee. Therefore, HAI requires those employees who are expected to wear respiratory protection to undergo a thorough medical evaluation performed by a physician or other licensed health care professional to determine whether the employee has any health restrictions before using a respirator. As part of the examination, employees are required to complete a short confidential questionnaire for the physician, relating to past, present, and expected future use of respiratory protection. A copy of this questionnaire is located in Appendix E. The physician must also be provided with information such as the size and model of the respirator to be used, the duration and frequency of respirator use, the expected work effort, additional PPE to be worn. and climatic extremes that may be encountered.

The physician must provide a written recommendation regarding the employee's ability to use a respirator. The recommendation should include any limitations on the employee's respirator use related to the medical condition of the employee, including whether or not the employee is medically able to use the respirator; the need, if any, for follow-up medical evaluations; and a statement that the physician provided the employee with a copy of the written recommendation. A annual follow-up medical evaluation will be required to reassess individual abilities, when an employee reports medical signs and symptoms that are related to his/her ability to use a respirator, or if recommended by the physician when a change in worksite conditions may result in an increased physiological burden on the employee. Employees **will not** be assigned respiratory protection devices unless it has been determined that the employee is physically able to perform the work while wearing the respirator.

5.5.2 Procedures for Selecting Respiratory Protection

HAI shall evaluate potential respiratory hazards at worksites relative to employee exposure and base respirator selection on those factors identified. HAI shall select and provide (at no cost to the employee) an appropriate respirator (certified by NIOSH) based on those potential respiratory or mucous membrane (e.g., eyes) hazards to which an employee is exposed, worksite specific requirements, and user factors that may affect respirator performance and reliability. Every attempt will be made to identify potential airborne contaminants and their associated hazards.

In situations where HAI cannot reasonably estimate the exposure potential, the area will be considered an immediately dangerous to life and health atmosphere (IDLH). HAI employees **are not** permitted to enter IDLH atmospheres. For IDLH or oxygen deficient (<19.5%) conditions, a full-facepiece pressure demand self-contained breathing apparatus (SCBA), certified by NIOSH, for a minimum service life of thirty minutes, or a combination full-facepiece pressure demand supplied-air respirator with auxiliary self-contained air supply must be used.

HAI shall select a respirator appropriate for the chemical and physical state of the contaminant. Respirators shall be selected from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user. Each new situation will be thoroughly evaluated before selecting the respirator adequately designed to protect the health of the employee. Typically, a full-facepiece, air-purifying respirator (APR) equipped with the appropriate cartridge(s) will be used, however, depending on the duration of exposure, environmental conditions, and concentration, an alternate mechanism may be required. When feasible, HAI shall make every attempt to implement engineering controls to abate the hazard(s).

5.5.3 Assigned Protection Factors

The assigned protection factor (APF) of a respirator reflects the level of protection that a properly functioning respirator is expected to provide correctly fitted and trained users. The APF is a unitless number based on the concentration of contaminant that leaks into a respirator facepiece relative to the known concentration outside the facepiece. The following table describes APFs for various types of respirators:

Table of NIOSH/OSHA APFs for various types of Respirators

{PRIVATE}*Respirator Class and Type*	*APF*
Air-Purifying	
Filtering Facepiece	10
Half-Mask	10
Full-Facepiece	50
Powered Air-Purifying	
Half-Mask	50
Full-Facepiece	250
Loose Fitting Facepiece	25
Hood or Helmet	25
Supplied-Air	
Half-Mask-Demand	10
Half-Mask-Continuous	50
Half-Mask-Pressure Demand	1000
Full-Facepiece Demand	50
Full-Facepiece Continuous Flow	250
Full-Facepiece Pressure Demand	2000
Loose Fitting Facepiece	25
Hood or Helmet	25
Self Contained Breathing Apparatus (SCBA)	
Demand	50
Pressure Demand	10,000

The APF can be used to estimate the maximum use limit (MUL) of a successfully fitted respirator. The MUL is the highest concentration, **not exceeding the IDLH concentration**, of a specific contaminant in which a respirator can be worn. The occupational exposure limit (OEL) is the recommended exposure limit (REL), threshold limit value (TLV), or permissible exposure limit (PEL) for a given chemical agent.

MUL = APF x OEL

For example, if a contaminant has an OEL of 10 ppm, then the MUL for any air purifying half-mask respirator is 100 parts-per-million (ppm); the MUL for a full-facepiece air-purifying respirator or demand SCBA would be 500 ppm.

5.5.4 Fit Testing Procedures

Before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same model and size of respirator that will be used. Employees shall be fit tested before initial use of a respirator, whenever a different facepiece is used, and at least annually thereafter. **Employees who are required to wear a respirator because of exposure to asbestos above the permissible exposure limit must be fit tested every six months.** Additional fit testing will be conducted when changes in an employee's physical condition (e.g., facial scarring, dental changes, cosmetic surgery, obvious change in body weight) could affect respirator fit or when an employee expresses that the fit of the respirator is unacceptable. HAI shall ensure that employees using a tight-fitting facepiece respirator pass an appropriate qualitative and/or quantitative fit test. The fit test shall be administered using an OSHA-approved qualitative and/or quantitative fit test.

5.5.4.1 Qualitative Fit Tests

Qualitative fit testing involves the introduction of a harmless, odorous or irritating substance (e.g., isoamyl acetate, Bitrex, irritant smoke, or saccharin) into the breathing zone of the wearer. A proper fit is indicated if the wearer completes several exercises (e.g., breathing deeply, moving the head from side to side, moving the head up and down, and talking) and cannot detect the specified substance. HAI uses either isoamyl acetate or irritant smoke to perform qualitative fit tests.

- Isoamyl acetate is a chemical with an easily detectable odor. It is used to check the seals of the respirator when organic vapor filters are used. If the user detects any odor, it is an indication that the fit is faulty and adjustment to the respirator seal is required.

- The irritant smoke test involves exposing the wearer to an irritating aerosol produced by a smoke tube. It is used to check the seals of a respirator equipped with high efficiency particulate air (HEPA) filters. If the user detects any irritant smoke, it is an indication that the fit test is faulty, and adjustment to the respirator seal is required.

Please note that a qualitative fit test will result in an assigned protection factor for the respirator.

5.5.4.2 Quantitative Fit Tests

Quantitative fit testing results in a fit factor specific to the individual and the respirator being used. Quantitative fit testing offers more detailed information on respirator fit. It involves the introduction of an aerosol to the wearer. A tube connected from the respirator to the testing device measures leakage into the respirator. While the wearer performs several exercises that could induce facepiece leakage, the air inside the facepiece is measured for the presence of the aerosol.

5.5.4.3 Field Fit Checks

After a successfully completed fit test, employees should check the fit of his/her respirator immediately before and periodically during respirator use in the field by performing a positive and negative pressure check.

- To conduct a positive pressure check, cover the exhalation valve with your hand and gently exhale into the facepiece. If a slight positive pressure is built up inside the facepiece without any evidence of leakage, the fit is satisfactory.
- To perform a negative pressure check, close off the air inlet valves (cartridges) with your hands. Inhale gently to collapse the facepiece slightly, and hold your breath for 10 seconds. If the facepiece remains slightly collapsed and no leakage is detected, the respirator fits properly.

5.5.5 Proper Use of Respirators

Each respirator user must receive fitting instructions that include demonstrations and practice on how the respirator should be worn, how to adjust the respirator, and how to determine if the respirator fits properly. Respirator users shall follow procedures for prohibiting conditions that may result in facepiece seal leakage, preventing removal of respirators in hazardous environments, taking actions to ensure continued effective respirator operation throughout the workshift, and the use of respirators in IDLH atmospheres.

Although respirators are designed for maximum efficiency, they cannot protect the wearer without a tight seal between the facepiece and wearer. Employees will not be permitted to wear respirators with tight-fitting facepieces if the employee has any facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function. Employees with small

mustaches are permitted to wear a respirator as long as the mustache does not interfere with the ability to obtain a tight seal between the facepiece and wearer.

Corrective lenses worn by employees present a problem when fitting respirators. Special mountings to hold corrective lenses inside full-facepieces are available. If corrective lenses are needed, the facepiece and lens must be fitted to provide good vision, comfort, and proper sealing. The corrective lenses will be provided at no cost to the employee. To assure proper protection for a facepiece, it must be checked by the wearer each time the respirator is used.

Full-facepiece and half-mask respirators have different fitting characteristics. Of the several brands of each style marketed, each has a different size and fitting characteristic. Because individual characteristics vary, several models and sizes are necessary to accommodate everyone. Any employee who finds that they cannot obtain a proper fit with their respirator must immediately notify their HSO and/or the Project Manager. Employees will not be permitted to work in any area where respiratory protection is required until the employee is equipped and fit tested with a proper-fitting device. The HSO of each respirator wearer is responsible for ensuring that the appropriate fit test has been conducted and that the result of such testing has indicated a proper fit.

Appropriate surveillance of worksite conditions and degree of employee exposure or stress shall be maintained by the SHSO. When there is a change in worksite conditions or degree of employee exposure or stress that may affect respirator effectiveness, the continued effectiveness of the respirator shall be reevaluated.

HAI EMPLOYEES ARE NOT TO PERFORM WORK IN IDLH ATMOSPHERES.

5.5.6 Respirator Cleaning and Maintenance

5.5.6.1 Cleaning and Disinfecting

Each employee who has finished wearing a disposable respirator (e.g. dust mask) that is to be used only once shall place the respirator in the appropriate waste receptacle or disposal container. The disposable respirator shall not be taken from the worksite for additional use or used a second time under any circumstances.

Respirators that are routinely used shall be regularly cleaned and disinfected by the respirator user. This shall be done as often as necessary to maintain a sanitary condition, but on a daily basis at a minimum when in use. Never use a respirator that has previously been used by another person, unless you have been fit tested on the same model and size of that respirator. If the respirator is the same model and size, first clean and disinfect the respirator before usage. Respirators maintained for emergency use and for fit testing training shall be cleaned and disinfected after each use. The following describes how to clean and disinfect a respirator correctly:

- Remove any filters or cartridges. Filters and cartridges should not be washed. Discard any filters that are clogged or cartridges that are spent.
- Wash the respirator in a solution of warm water and a quarter cup of bleach. Rinse the device with clean warm water.
- After drying, place the respirator in a sealable plastic bag.

5.5.6.2 Inspection

All respirators used in routine situations shall be inspected before each use and during cleaning. The respirator should also be inspected after taking it off before putting the respirator in storage. Respirators maintained for use in emergencies shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use. Emergency escape-only respirators shall be inspected before being carried to the worksite for use.

Respirator inspections should include the following:

- a check of respirator function, tightness of connections, and the condition of the various parts including, the facepiece, head straps, valves, connecting tube, gaskets, speaking diaphragm, nose piece, and cartridges, canisters, or filters;
- a check of the elastomeric parts for pliability and signs of deterioration; and,
- SCBAs should be inspected monthly. Air and oxygen cylinders should be fully charged and shall be recharged when the pressure falls to 90% of the manufacturer's pressure level.
- The inspector of respirators maintained for emergency use shall:

- certify by documenting the date the inspection was performed, the name of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and

- provide this information on a tag or label that is attached to the storage compartment for the respirator, kept with the respirator or included in inspection reports stored as paper or an electronic file. This information shall be maintained until replaced by a subsequent certification.

An employee should **never** wear an unclean respirator or a respirator that is in any way defective. Employees are required to report any instance of a defective or ineffective respirator to the HSO immediately.

Respirator repairs and part replacement shall only be performed by the HSC or HSO. There shall be no interchanging of parts between different brands of respirators or different model numbers manufactured by the same manufacturer. Replacement parts must be NIOSH-approved for the particular respirator in use. No attempts shall be made to replace components or make adjustments or repairs beyond the manufacturer's recommendations. Reducing valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair. Employees are strictly **prohibited** from altering the respirator in any way that may inhibit the designed functionality of the device.

5.5.6.3 Storage

When not in use, all respirators shall be stored in a sealed container and protected from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They shall be packed and stored to prevent deformation of the facepiece and exhalation valve. Gas and vapor cartridges should be kept in a sealed container so they do not passively adsorb gases and vapors from the storage area and thereby reduce the filter life. Particulate filters should also be protected from dusts and dirt.

5.5.7 Identification of Filters, Cartridges, and Canisters

All filters, cartridges, and canisters used at the worksite shall be labeled and color-coded with the NIOSH approved label. No one shall remove the label and the label must remain legible.

There are nine classes of filters (three levels of filter efficiency, each with three categories of resistance to filter efficiency degradation). The levels of filter efficiency are 95%, 99%, and 99.97%. The categories of resistance to filter efficiency degradation are labeled N (*N*ot resistant to oil), R (*R*esistant to oil), and P (oil *P*roof). Selection of filter efficiency depends on how much filter leakage can be accepted. Selection of N-, R-, and P-series filters depends on the presence or absence of oil particles, as follows:

- If no oil particles are present, use any series (N, R, or P).
- If oil particles are present, use only R or P series.
- If oil particles are present and the filter is to be used for more than one work shift, use only P series.

Each respirator must be equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant. The ESLI is a system that warns the user of the approach of the end of adequate respiratory protection (e.g., the sorbent is approaching saturation or is no longer effective). If there is no ESLI appropriate for conditions at the work site, then a change of schedule for canisters and cartridges based on objective information or data must be established to ensure that they are changed before the end of their service life. The information and data relied upon, and basis for the change schedule and reliance on the data must be documented and described.

5.5.8 Limitations of Respirators

1. **Vision**

   When a respirator user must wear corrective lenses, a protective spectacle or goggle, a face shield, or other eye and face protective device, the item should be fitted to provide good vision and should be worn in such a manner as not to interfere with the seal of the respirator to the wearer.

   Temple bars or straps of a corrective spectacle which pass between the sealing surface of a full-facepiece respirator and the face may prevent a good seal and therefore such a spectacle shall not be worn with a full-facepiece respirator. Special corrective lenses, which are made to be mounted inside a full-facepiece, are available for use by anyone who wears corrective lenses.

   Employees who wear full-facepiece respirators will have limited peripheral vision.

2. **Communications**

Speech transmission while wearing a respirator is often necessary to perform specific tasks. Although a respirator facepiece distorts the human voice to some extent, the respirator's exhalation valve usually provides a pathway for some speech transmission over short distances in relatively quiet areas.

3. **Immediately Dangerous to Life or Health (IDLH) Atmospheres**
An IDLH atmosphere is one that is oxygen deficient or contains excessive concentrations of a contaminant, including concentrations of a substance above the lower explosive limits. **HAI EMPLOYEES ARE NOT TO PERFORM WORK IN IDLH ATMOSPHERES.**

4. **Confined Spaces**
Before a person is allowed to enter a confined space, real-time air monitoring shall be carried out to determine the concentration (if any) of known or expected flammable or toxic contaminant present and to determine the concentration of oxygen.

5. **Low-Temperature Environments**
A low-temperature environment may cause fogging of the lens in a respiratory-inlet covering and freezing or improper sealing of the exhalation valve. Coating the inside surface of the lens may prevent fogging at low atmospheric temperatures approaching 32°F, but severe fogging of the lens may occur at temperatures below 0°F. Full-facepieces are available with nose cups that direct the warm and moist air through the exhalation valve without contacting the lens, and these facepieces should provide satisfactory vision at temperatures as low as -25°F. At very low atmospheric temperatures, the exhalation valve of a respirator may freeze open or closed due to the presence of moisture.

6. **High-Temperature Environments**
A person working in a high temperature environment is under stress due to the heat. Wearing a respirator in such an environment applies an added physiological burden and should be minimized by using a respirator having a low weight and a low resistance to breathing. The air-line-type supplied-air respirator is recommended for use in a high-temperature environment.

7. **Poor Warning Properties**
Some contaminants have poor warning properties (e.g. high odor threshold). The respirator wearer will be unable to identify when breakthrough occurs with the cartridges (indicates when cartridges need replaced) and may potentially be exposed to concentrations exceeding the PEL.

5.5.9 Employee Training

HAI shall provide training to employees who are required to use respirators. Training shall include the following elements:

- why a respirator is necessary and how improper fit, usage and maintenance can compromise the protective effect of the respirator;

- what the limitations and capabilities of the respirator are;
- how to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
- how to inspect, don and doff, and use the respirator, and check the seals and elasticity of the respirator;
- what the procedures are for maintenance and storage of the respirator; and
- how to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

Training will be conducted before an employee is required to use a respirator at a worksite. Refresher training will be performed annually, and/or when there are changes in the workplace or type of respirator.

Failure to follow all instructions and training on use, care and protection and/or failure to wear respirator during times of exposure will reduce respirator effectiveness and may result in sickness or death. The aerosols, gases, and vapors that can be dangerous to may not be visible with the normal eye. Appropriate discipline will be taken against any employee who fails to observe any portion of the respiratory protection program.

5.5.10 Program Evaluation

Evaluations of the respiratory protection program will be performed periodically to ensure that the program is being properly implemented. Employees will be surveyed to assess their views on the program effectiveness and to provide feedback for future program revisions, to identify any problems (e.g., respirator selection, fit, use, and maintenance), and to ensure that they are using the respirators properly.

5.5.11 Recordkeeping

Records of medical evaluations shall be preserved and maintained for at least the duration of employment plus thirty years. Copies of medical evaluations will be made available to employees upon request.

A record of qualitative and quantitative fit-tests administered shall be established. The record shall include the name of the employee tested, the type of fit test performed; the specific make, model,

style, and size of the respirator tested; the date of the test, and the test results. Fit test records shall be retained for respirator users for the duration of employment plus thirty years.

ATTACHMENT I

Incident Investigation Form

Hull & Associates, Inc.
3401 Glendale Avenue
Suite 300
Toledo, Ohio 43614
(419) 385-2018
Fax (419) 385-5487

INCIDENT INVESTIGATION REPORT

Employee Name _____ Position _____

Date of Birth _____ Office _____

SSN _____ Incident # _____

Date of Incident _____ Time _____

Accident Location _____

_____

Length of Employment with HAI _____

Length of Time at Job Site _____

Time Shift Started _____

Full description of incident (include task being performed) _____

_____

Type of incident (e.g., inhalation, ingestion, contact, lifting, temp. extremes, motor vehicle, slip, trip, fall, etc.) _____

_____

Nature of incident/part of body (e.g., laceration, burn, fracture, contusion, heat stroke, etc.) _____

_____

What factors led to incident (e.g. failure to wear PPE, lack of/improper training, unsafe speed, inattentive, etc.) _____

Have any near misses occurred similar to this incident _____

_____

What equipment or machinery was involved _____

What PPE was the employee wearing _____

Describe weather conditions and terrain _____

Follow up actions required (e.g., provide PPE, improve/administer training, modify/replace equipment, etc.) _____

Additional concerns _____

Did employee receive professional medical attention (Y / N)

One or more lost work day (Y / N)
If yes, indicate # of days _____

Was employee hospitalized (Y / N)

One or more days of restricted duty (Y / N)
If yes, indicate # of days _____

Name/address of hospital/clinic _____

_____

Name of physician _____ Telephone _____

Was a Health and Safety Plan prepared for this project _____

Was a Health and Safety Briefing form prepared for this project _____

Was an on-site or interoffice Health and Safety briefing held for this project _____

If so, when _____

Who attended _____

_____

Employee Statement _____

_____

_____

_____

_____

By _____ Signature _____ Date _____

Witness Statement _____

_____

_____

_____

_____

By _____ Signature _____ Date _____

Project Manager Statement _____

_____

_____

_____

By _____ Signature _____ Date _____

HSC/HSO Review _____

_____

_____

_____

By _____ Signature _____ Date _____

OSHA Recordable Incident (Y / N)

OSHA forms 101.200 Property logged (Y / N)